5. Micro-landscape context effects on the dispersal of coffee berry borer (*Hypothenemus hampei)* in Costa Rica

Olivas, Amada[1]; Rivera, Cipriano[1]; Dufour, Bernard[2]; Hidalgo, Eduardo[1]; DeClerck, Fabrice[1]; Avelino, Jacques[1,2]
[1] CATIE, Turrialba, Costa Rica
[2] CIRAD, UPR Bioagresseurs de Pérennes, Montpellier, France

Coffee berry borer (CBB) *Hypothenemus hampei* (Ferr.) is a recent pest of the Costa Rican landscape. Females have the ability to fly, and particularly do so when seeking new coffee berries to colonize after harvest. CBB dispersal is believed to be facilitated by the connectivity between coffee plantations, but may be hampered by fragmented landscapes when alternate land uses are found between coffee patches.

To assess the effects of land use on intermediate CBB dispersal distances (<150 m) we established a six-month study in six locations of the Turrialba region of Costa Rica that measured CBB movement in transects spanning isolated coffee plantations into three adjacent land uses: forest, sugar cane and pasture. At each location, we placed six transects starting 30 m within the coffee plantation, continuing 140 m into each of the adjacent land uses. Within these transects we placed one CBB trap (Brocap®) each 10 m. We baited each trap with a mixture of ethanol and methanol.

We captured 96.5% of the individuals within the coffee plots and only 3.5% outside. The majority of the individuals captured outside (30.2%) were found directly adjacent to the coffee on the edge between the two uses. However, some individuals (2.9%) were found 140 m from the edge in the furthest trap. Despite these low dispersal distances, we did find differences between the three adjacent land uses. The number of CBB captured in forests was only 12 % and 19 % the number of CBB captured in sugar cane and pasture respectively.

Our results show that CBB does not regularly disperse outside of coffee although occasional individuals were captured 140 m from coffee edges. This finding suggests that breaking connectivity between coffee plantations may help to reduce CBB dispersal particularly when low permeability land uses such as forests are placed between coffee plots.